FCAL 4ns Timing Offsets

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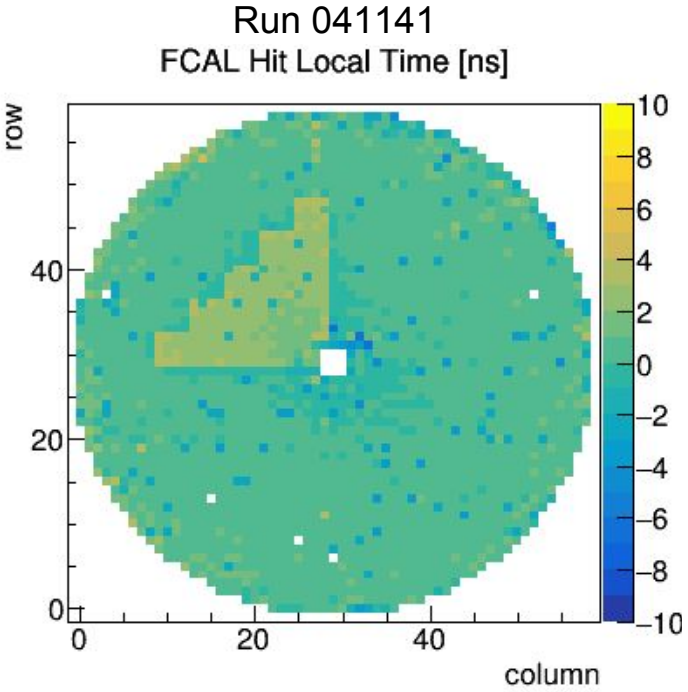
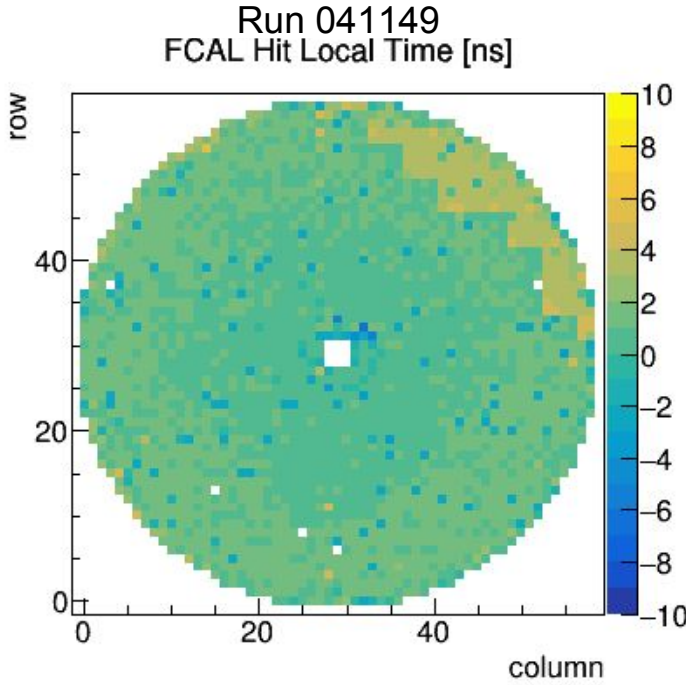
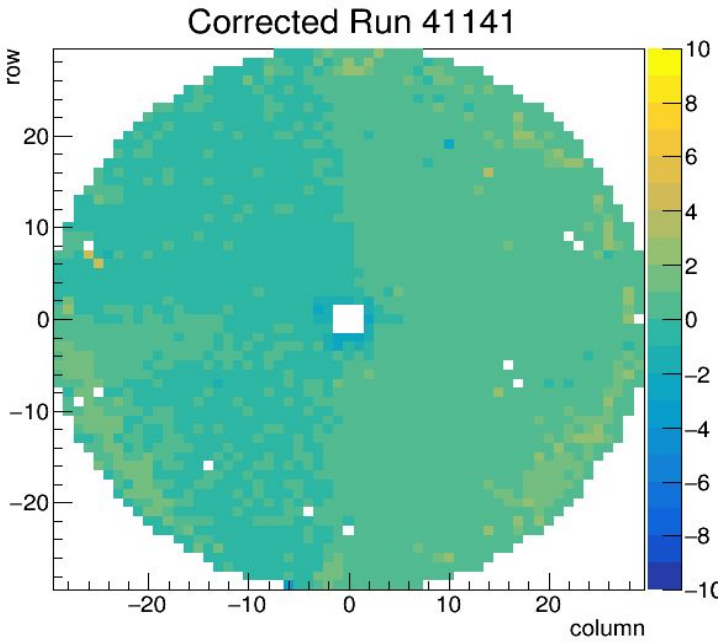
May 31, 2018

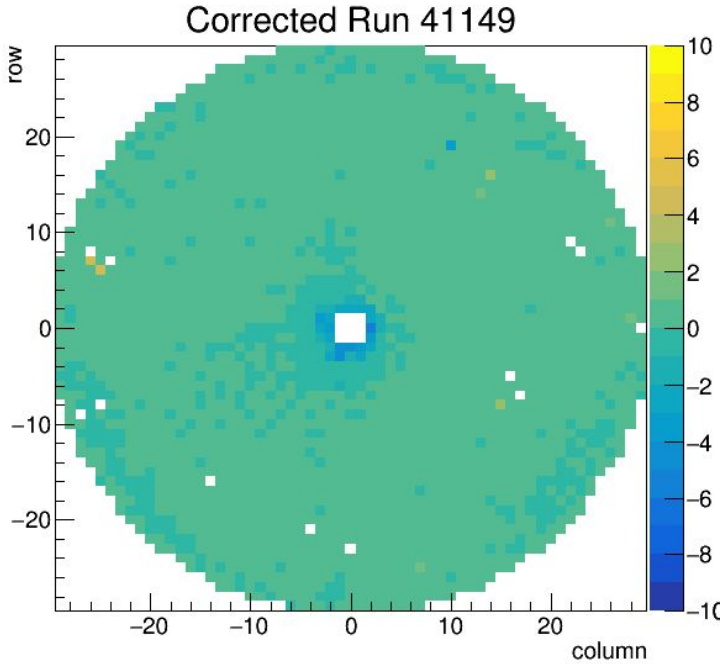
Crates shifted by +4 ns for a run



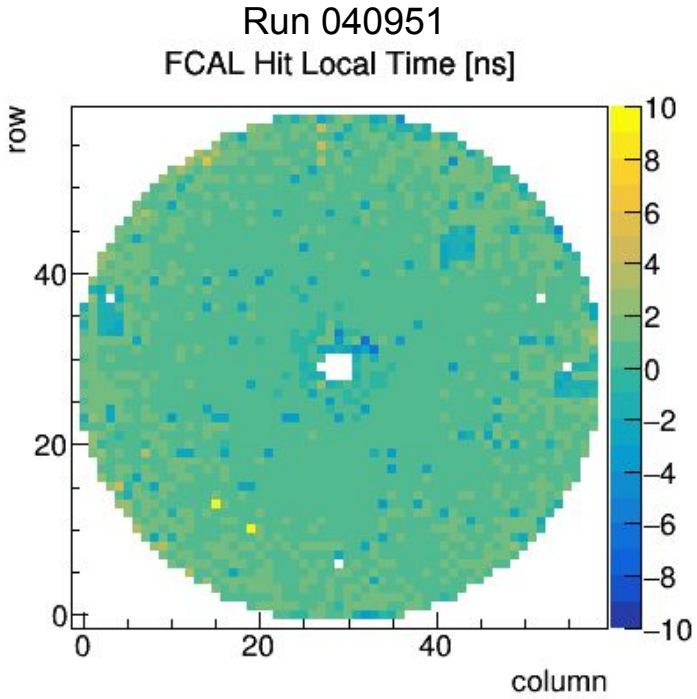


Crates shifted by +4 ns for a run

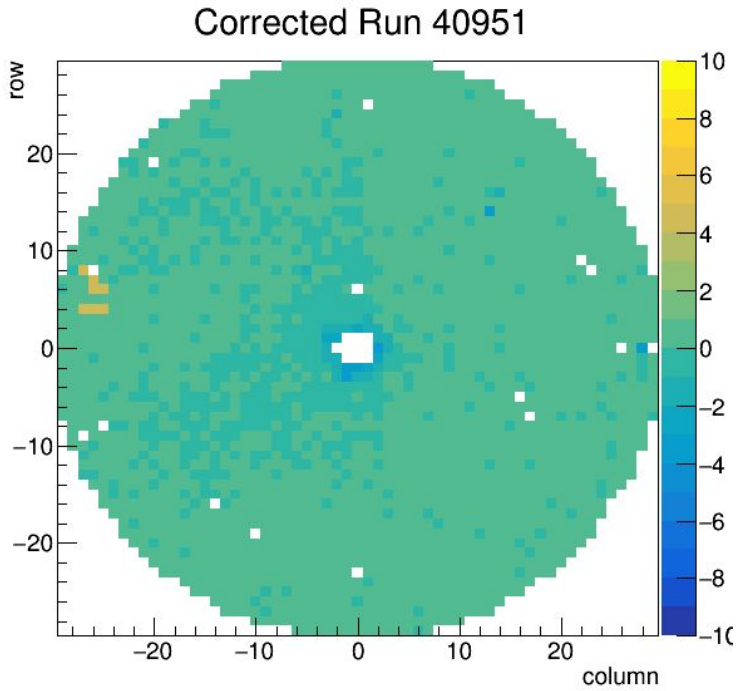




Slots shifted by -4 ns for a run



Slots shifted by -4 ns for a run



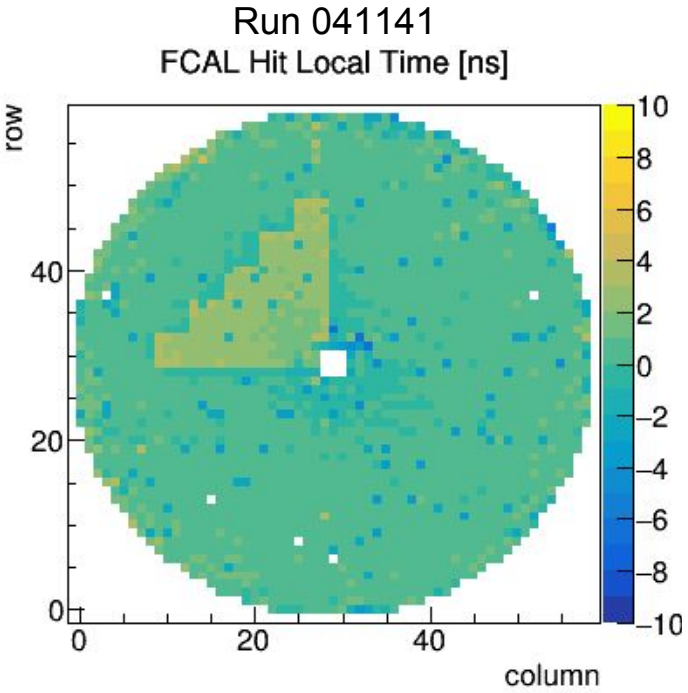
Locating offsets

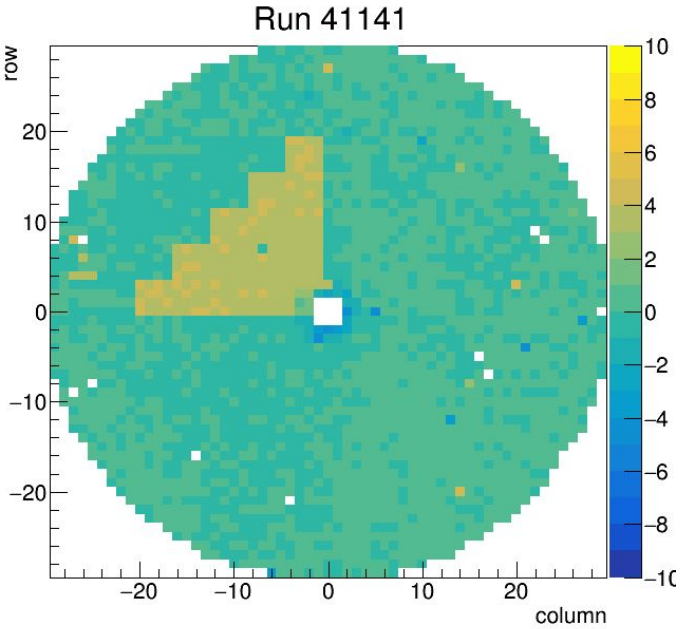
-Basic idea -> Go through given set of runs, locate offsets, output corrections, then redo runs with new calibrations

-For each channel/slot/crate, determine which time is a ‘good time’ and which time is an ‘offset time’. This is done by finding most occuring times and ASSUMING they are the good times and not the offset times, or that the offsets occur less often than not.

-Get a reference time for each channel/slot/crate, then compare each run to those values.

Recreation of plots from wiki





Correcting for offsets

-For each run, determine if a channel/slot/crate is offset or not by checking the difference between the individual run time value and the reference time value

-Assign an ‘correction value’ of +4, 0, or -4 to each channel

-All correction values for each channel/slot/crate are output into text files

-The correction values from the output text files are then added to the old offset values from the CCDB FCAL/timing_offsets to create updated timing offsets.

Sample Output

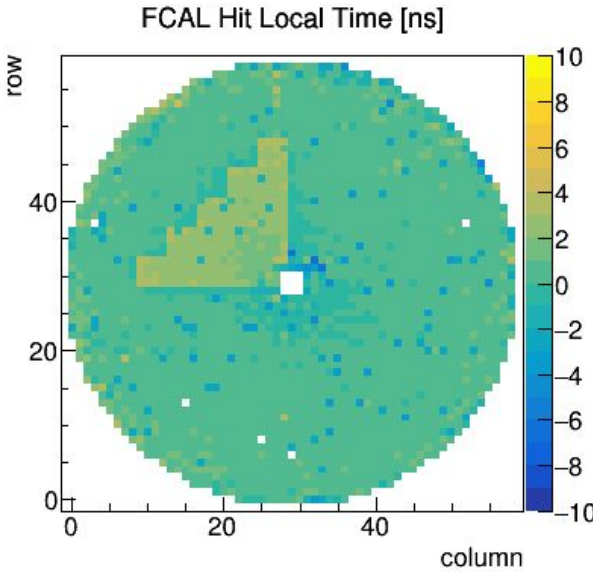
Crate	Offset
1	0
2	0
3	4
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0

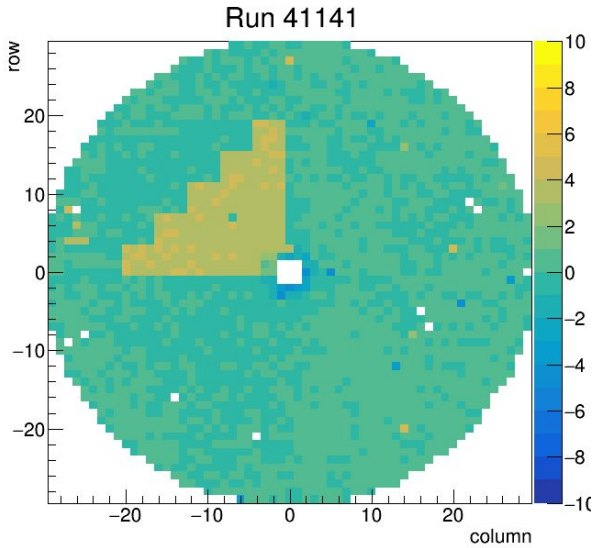
Crate/Slot	Offset
2/10	0
2/11	0
2/12	0
2/13	0
2/14	0
2/15	0
2/16	0
2/17	0
2/18	0
3/3	4
3/4	4
3/5	4
3/6	4
3/7	4
3/8	4

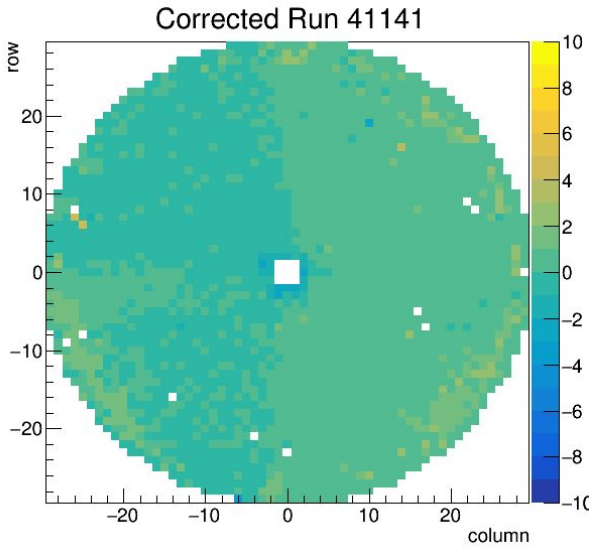
Chan	Offset
551	0
552	0
553	0
554	0
555	0
556	0
557	4
558	4
559	4
560	4
561	4
562	4
563	4
564	4

CCDB Input Sample
-0.0198474
1.8755
-1.55142
0.251541
2.97986
0.552931
-6.15895
-5.77186
-6.43135
-7.23078
-6.50274
-8.28708
-6.749
-7.50491

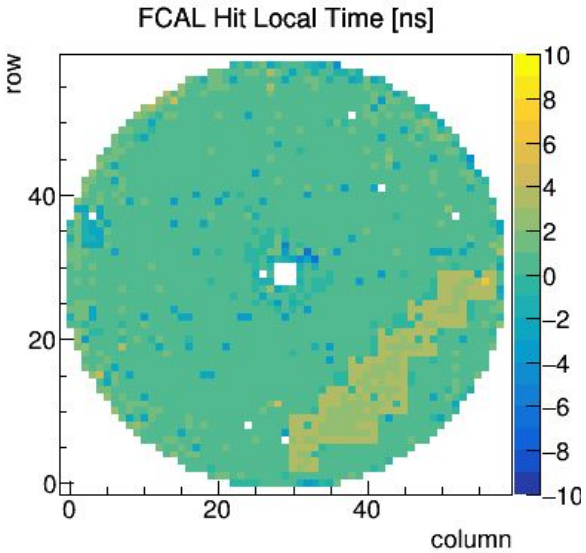
Examples

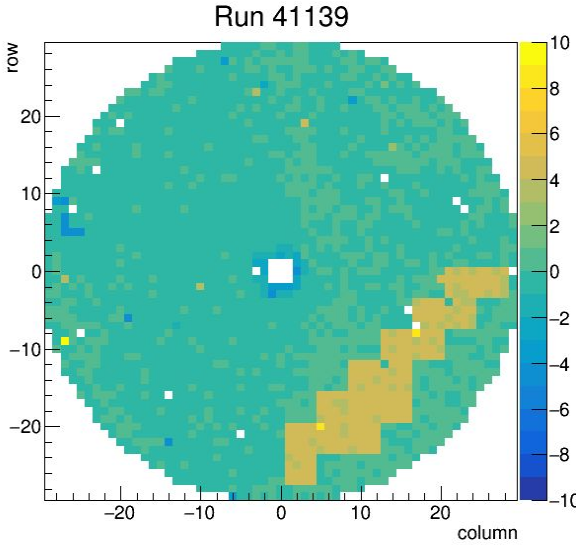

FCAL Hit Local Time [ns]
row
column
0
20
40
10
8
6
4
2
0
−2
−4
−6
−8
−10

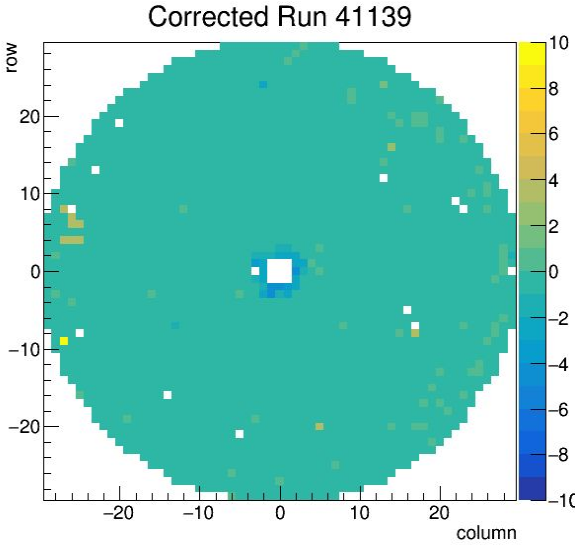

Run 41141
row
column
−20
−10
0
10
20


Corrected Run 41141
row
column
−20
−10
0
10
20

Examples

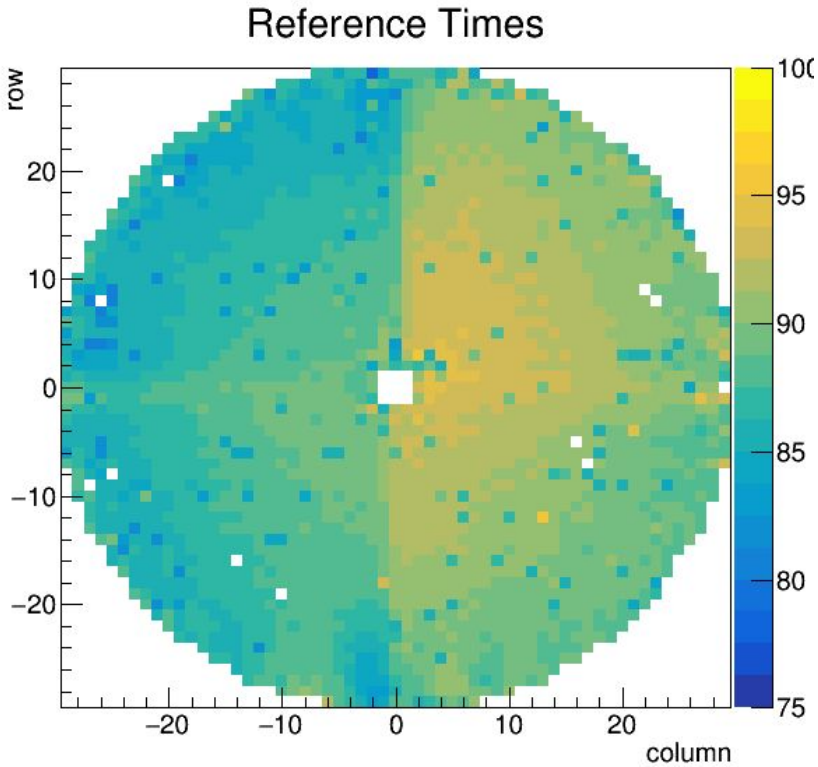

FCAL Hit Local Time [ns]
row
column
0
20
40
10
8
6
4
2
0
−2
−4
−6
−8
−10


Run 41139
row
column
−20
−10
0
10
20
10
8
6
4
2
0
−2
−4
−6
−8
−10


Corrected Run 41139
row
column
−20
−10
0
10
20
10
8
6
4
2
0
−2
−4
−6
−8
−10

Next

-Improving slot offset detection

-Calibrations for runs 41106-41482

Reference Plot